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EXAMINER

KADING, JOSHUA A

ART UNIT PAPER NUMBER

2661

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/627,179

Applicant(s)

HELLWIG ET AL.

Examiner

Joshua Kading

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-24, and 26-31 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 25 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is
5 required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 25 states, "an apparatus according to claim 24, wherein said collision resolution unit is integrated in said central switching unit." However, claim 24 states, "...said central switching unit has a collision resolution unit..." This says the same thing as claim 25, therefore claim 25
10 fails to further limit claim 24.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

15 The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14-20, 21, 22, 24-26, 28, and 30 are rejected under 35 U.S.C. 112, first
20 paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant, in independent claims 14, 21, and 22, has changed "availability
25 information" to "availability request information". The specification does not support

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"availability request information". For example, applicant suggests that "availability request information" is supported in the specification on page 16, line 7 to page 17, line 19. However, these pages do not discuss an "availability request information" item.

These pages discuss a "contention request vector" which is a combination of an

5 "availability information" item. The term "availability request information" is not explicitly defined or supported anywhere in the specification.

It should be noted that if applicant disagrees with the rejection based on new matter and can point to support in the specification, the rejections from the previous

10 Office Action dated 23 October 2003 still stand. Further explanation is given in the "Response to Arguments" section.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

15 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14, 15, 20, 21, 22, 24, 26, 27, 28, 29, and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

20

In regard to claims 14, 21, 22, 24, 26, 27, 28, and 29, applicant mentions "the port units" or "port units" or "each port unit" or "the other port units" or "the relevant ports" or "said port units" throughout the claim language. It is unclear from this phrasing which port units applicant is referring to. For example, claim 14, section A refers to a

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plurality of port units, then claim 14, section B refers to a connection between two port units, it is unclear from the claim language, "the port units" or "port units", which set of port units (section A or B) applicant is referring to.

5 Claims 14, 16, 18, 21, 22, 24, 26, 27, 28, and 29 also mention, "the relevant port" or "the relevant transmitting port units" or "the transmitting port units" or "the receiving port units" or "the respective receiving port units" throughout the claim language. It is unclear, for similar reasons as in paragraph 27, which port units applicant is referring to with this claim language.

10

 Claims 14, 21, and 22 also mention, "recombining the cells received in a plurality of steps". It is unclear what steps applicant is referring to. Is applicant referring to the steps of receiving the cells or of recombining the cells? If the applicant is referring to recombining the cells what are the steps for recombining?

15

 In regard to claims 28 and 29, applicant states on line 9 of claims 28 and 29, "the information". It is unclear what information applicant is referring to because applicant makes reference to several different information items in this claim and its parent claims.

20

 Claims 14, 15, 21, and 22 recite the limitation "the data packet" or "the data packet or cells" or "the received data packets or cells" in claims 14 and 21 lines 4, 5 of

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section C; in claims 14 and 21 lines 5 of section H; in claims 14 and 21 lines 2, 3 of section I; in claim 15 line 3; in claim 22 lines 21, 23, 50-52, and 55. There is insufficient antecedent basis for this limitation in the claim.

5 Claims 14, 21, and 22 recite the limitation "the...one data packet" in claims 14 and 22 line 4 section D; in claim 22 line 28. There is insufficient antecedent basis for this limitation in the claim.

 Claim 31 recites the limitation "the availability information" in claim 31, line 4.

10 There is insufficient antecedent basis for this limitation in the claim.

 Regarding claims 14, 21, and 22, applicant discloses "availability request information". Applicant points to the specification, page 16, line 7 to page 17, line 19 for support of "availability request information". However, it is not clear what "availability
15 request information" is. Is it a form of an "availability information" item? Or is it the "contention request vector"? Is the "availability request information" even a request or is it just an information item? The specification does not support an "availability request information" so it is unclear what it is.

20 Regarding claims 14, 21, 22, 28, and 29 applicant makes reference to "in steps" or "a next step" or "a particular one of next steps". It is unclear what this "next step" or these "next steps" are. It is inappropriate to claim additional steps in a claim and not

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define them. There is no way for one with ordinary skill in the art to know what these steps are unless they are defined.

Claim 14, section C, lines 4-5 and 7; claim 21, section C, lines 4-5 and 7; and
5 claim 22, lines 21 and 23, recite the limitation "the data packet". There is insufficient antecedent basis for this limitation in the claim. It is acknowledged that applicant discloses "data packets", but there is no explicit disclosure of a single data packet anywhere in the claim.

10 Claims 14 and 21, section H, lines 5-6; and section I, line 3 and 6; claim 15, line 3; and claim 22, lines 50, 57, and 58 disclose "the data packets or cells" or "the data packets". It is unclear which "data packets or cells" or "data packets" applicant is referring to. For instance, applicant discloses "data packets" in section A and "cells" in section C, however, applicant also discloses "particular released data packets or cells"
15 in section H. There is no way to know which "data packet or cells" applicant is referring to. If the data packets and cells in sections H and I are the same data packets and cells as in section A and C, then this must be made clear in the claim language.

Claim Rejections - 35 USC § 102

20 The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Cordell (U.S. Patent 5,367,520).

In regard to claim 23, Cordell discloses an apparatus for switching a plurality of packet-oriented signals, comprising:

- 5 a central switching unit (figure 9, element 93); and
- a plurality of port units connected to said central switching unit, said port units and said central switching unit each having a control unit to carry out the method according to claim 14 (figure 9, elements 91, 93, 94, 95 where 91 and 94 are the port units, 93 is the central switching unit, and 95 is the control unit).

10

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

- 15 As understood at this time, claims 14, 16, 20, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Cai et al. (U.S. Patent 6,134,246).

20 In regard to claim 14, Cordell discloses a method for switching a plurality of packet-oriented signals, which comprises:

- a) supplying a respective signal to at least one port of a plurality of port units, each of the port units having a predetermined number of ports (figure 9, elements 91, 94 where there are clearly a plurality of port units (elements similar to 91 and 94) and a

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predetermined number of ports to which signals must be applied as is indicated by the inputs and outputs on the port units);

b) connecting the signal from a port on a port unit to another port on another port unit through a central switching unit coupled to the port units, and carrying out signal

5 transmission between the port units and the central switching unit in steps by transmitting data blocks (figure 9, elements 91, 93, 94 where the datapaths between these elements signify the coupling and element 93 is the central switching unit (col. 22, lines 12-13));

c) ascertaining with each port unit an address information item for each data
10 packet supplied to one of the at least one port of each port unit and using the address information item to determine that port unit to which the data packet will be transmitted, each port unit storing, in a buffer memory associated with the respective port unit, the data packet as a whole or segmented into a plurality of cells (col. 3, lines 42-43 shows a buffer associated with an address of a port unit; col. 7, lines 50-52 shows the cell being
15 directed to a final output port);

d) compiling with each port unit, at predetermined intervals of time, availability information indicating to which of the other port units the at least one of cell and at least one data packet will be transmitted (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines
20 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time);

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e) transmitting with the port units the availability information to the central switching unit (col. 7, lines 9-23 where by having the cells being self routing and having parts of the routing tag specifying output ports, the availability or routing tag must be transmitted with the cell to the central switching unit (93) in order to get to the output
5 ports and be further directed to its destination);

f) the central switching unit evaluating the availability information and using a prescribed specification to ascertain authorization information indicating from which port units a respective data packet or cell can be transmitted to which other port unit in a next step or in a particular one of next steps without the occurrence of blocking (col. 22,
10 lines 12-15 and col. 12, lines 34-36 where the CRD evaluates the availability information (the address information) and ascertains authorization information (the result of the address comparison by the CRD); col. 24, lines 64-67 shows the avoidance of blocking);

g) transmitting the authorization information at least to the relevant transmitting
15 port units with the central switching unit (col. 8, lines 42-45);

h) transmitting particular released data packets or cells with the transmitting port units to the central switching unit, and the central switching unit connecting the necessary paths between the transmitting port units and the receiving port units and transmitting the data packets or cells to the respective receiving port units through the
20 connected paths (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route to its destination (93), arriving at the destination or output (94)); and

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i) the receiving port units evaluating the address information in the received data packets or cells and assigning the data packets or cells to the relevant ports (col. 7, lines 46-52 shows the incoming data being routed to the appropriate output port address, thus the address information must have been evaluated at the receiving
5 ports)...

Cordell lacks ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports.

However, Cai et al. disclose ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant
10 ports (figure 3 where elements 130, 140, and 150 are incoming data packets that are desegmented into cells by element 20 then recombined at element 50 to form the output packet 160, although 20 and 50 are separate switches it is a matter of design choice to make them separate switches or combine them into one switch). It would have been obvious to one with ordinary skill in the art at the time of invention to include the switch
15 with the deassembler and assembler. The motivation being to increase apparent bandwidth of the system by splitting up the packet, processing it, then reassembling them into the packet.

Regarding claim 16, Cordell and Cai disclose the method of claim 14. Cai lacks
20 providing the availability information in a header of a packet or cell being transmitted by the relevant port unit to the central switching unit. However, Cordell further discloses providing the availability information in a header of a packet or cell being transmitted by

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the relevant port unit to the central switching unit (col. 7, lines 9-23 where by having the cells being self routing and having parts of the routing tag specifying output ports, the availability or routing tag must be transmitted with the cell to the central switching unit (93) in order to get to the output ports and be further directed to its destination, and the
5 routing tag being prepended to the cell acts as a header). It would have been obvious to one with ordinary skill in the art at the time of invention to include the availability information in a packet header for the same reasons and motivation as in claim 14.

Regarding claim 20, Cordell and Cai disclose the method of claim 14. Cai lacks
10 the step of indicating with a header of a packet or cell a port unit and a port on a the port unit to which the packet or cell will be transmitted. However, Cordell further discloses the step of indicating with a header of a packet or cell a port unit and a port on a the port unit to which the packet or cell will be transmitted (col. 7, lines 9-23 where the routing tag is broken down into bits some of which identify an output port of the crosspoint
15 plane (port unit) and finally an output port). It would have been obvious to one with ordinary skill in the art at the time of invention to include indicating with a packet header which packet or cell will be transmitted for the same reasons and motivation as in claim 14.

20 In regard to claim 22, Cordell discloses an apparatus for carrying out the method according to claim 14, comprising:

a central switching unit (figure 9, element 93); and

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a plurality of port units connected to said central switching unit, each of said port units having a predetermined number of ports and a buffer memory (figure 9, elements 91, 93, 94 where the port units (91, 94) are connected to the central switching unit (93) and the port units have buffer memories as can be seen in figure 9);

5 said port units and said central switching unit each having a control unit (figure 9, element 95), the control unit comprising:

means for supplying a respective signal to at least one port of said port units (figure 9, elements 91, 94 where there are clearly a plurality of port units (elements similar to 91 and 94) and ports to which signals must be applied as is indicated by the
10 inputs and outputs on the port units);

means for connecting the signal from a port on one of said port units to another port on another of said port units through said central switching unit (figure 9, elements 91, 93, 94 where the datapaths between these elements signify the paths and element 93 is the central switching unit);

15 means for transmitting signals between said port units and said central switching unit in steps by transmitting data blocks (figure 9, elements 91, 93, 94 where the datapaths signify transmitting signals between port units (91 and 94) element 93 is the central switching unit (col. 22, lines 12-13));

means for ascertaining with each port unit an address information item for each
20 data packet supplied to one of said at least one port of each of said port units (col. 3, lines 42-43 shows a buffer associated with a port unit which is obtained from an address information item);

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means for using the address information item to determine that port unit to which the data packet will be transmitted, each port unit storing, in said buffer memory, the data packet as a whole or segmented into a plurality of cells (col. 3, lines 42-43 shows a buffer associated with a port unit; col. 7, lines 50-52 shows the cell being directed to a
5 final output port);

means for compiling with each port unit, at predetermined intervals of time, availability information indicating to which of the other port units the at least one of cell or at least one data packet will be transmitted (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13,
10 lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time);

means for transmitting the availability information to the central switching unit using the port units (col. 22, lines 12-15 where the CRD gets the availability information
15 from the port units);

means for evaluating the availability information using the central switching unit and for using a prescribed specification to ascertain authorization information indicating from which of said port units a respective data packet or cell can be transmitted to which other of said port units in a next step or in a particular one of next steps without the
20 occurrence of blocking (col. 22, lines 12-15 and col. 12, lines 34-36 where the CRD evaluates the availability information (the address information) and ascertains

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authorization information (the result of the address comparison by the CRD); col. 24, lines 64-67 shows the avoidance of blocking);

means for transmitting using the central switching unit the authorization information at least to the relevant transmitting port units (col. 8, lines 42-45);

5 means for transmitting particular released data packets or cells to said central switching unit using the transmitting port units (figure 9, elements 91 and 93 and the data paths between them indicate the input of a data packet (91) and being transmitted to the central switching unit (93));

means for connecting the necessary paths between said transmitting port units
10 and said other receiving port units using said central switching unit (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route through the central switching unit (93) to its destination, arriving at the destination or output (94));

means for transmitting the data packets or cells to respective other receiving port
15 units through the connected paths (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route through the central switching unit (93) to its destination, arriving at the destination or output (94));

means for evaluating address information in the received data packets or cells
using said receiving port units (col. 7, lines 46-52 shows the incoming data being routed
20 to the appropriate output port address and thus the address information being evaluated using said receiving port units); and

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means for assigning the data packets or cells to the relevant ports (col. 7, lines 46-52 shows the incoming data being routed to the appropriate output port address, thus the address information must have been evaluated at the receiving ports)...

Cordell lacks ...if necessary, means for recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports.

However, Cai et al. disclose ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports (figure 3 where elements 130, 140, and 150 are incoming data packets that are desegmented into cells by element 20 then recombined at element 50 to form the output packet 160, although 20 and 50 are separate switches it is a matter of design choice to make them separate switches or combine them into one switch). It would have been obvious to one with ordinary skill in the art at the time of invention to include the switch with the deassembler and assembler. The motivation being to increase apparent bandwidth of the system by splitting up the packet, processing it, then reassembling them into the packet.

Regarding claim 24, Cordell and Cai disclose the apparatus of claim 22. Cai lacks a central switching unit that has a collision resolution unit for using a prescribed specification to create a fairest possible authorization information item during a condition in which a plurality of said port units at the same time contain at least one data packet or cell available for transmission to the same other one of said port units.

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However, Cordell further discloses a central switching unit that has a collision resolution unit for using a prescribed specification to create a fairest possible authorization information item during a condition in which a plurality of said port units at the same time contain at least one data packet or cell available for transmission to the same other one of said port units (figure 9, element 93 where the CRD is the content or collision resolution unit; col. 12, lines 19-38 describes the CRD and a fairness scheme). It would have been obvious to one with ordinary skill in the art at the time of invention to include the collision resolution unit with the central switching unit for the same reasons and motivation as in claim 22.

10

Claims 15, 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell and Cai et al. as applied to claim 14 above, and further in view of Diaz et al. (U.S. Patent 5,361,255).

15

In regard to claim 15, Cordell and Cai et al. disclose the method of claim 14 and transmitting availability information...and the data packets or cells synchronously at predetermined intervals of time (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time, and if the routing tag is prepended to the cell, then the routing tag must be sent at the same time (synchronously) as the data or cell). Cordell and Cai et al. lack

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transmitting... authorization information... synchronously at predetermined intervals of time. However, Diaz et al. disclose transmitting... authorization information... (figure 5a-5f, elements 50 and 56; col. 10, lines 9-36 where the V-bit (element 50) corresponds to part of the authorization information and the priority field (element 56) corresponds to the rest of the authorization information, the V-bit invalidates segments with the same address that have not won content resolution and the priority field allows the segments to be prioritized; the authorization information will be transmitted with the data because it is attached as the header as in figure 5a-5f). It would have been obvious to one with ordinary skill in the art at the time of invention to include the authorization information with the availability information and the data packets or cells. The motivation being to eliminate blocking at each point in the switching process.

In regard to claim 18, Cordell and Cai et al. disclose a method according to claim 14. Cordell and Cai et al. lack providing the authorization information in a header of a packet or cell being transmitted from the central switching to the relevant port unit. However, Diaz et al. disclose providing the authorization information in a header of a packet or cell being transmitted from the central switching to the relevant port unit (figure 5a-5f, elements 50 and 56; col. 10, lines 9-36 where the V-bit (element 50) corresponds to part of the authorization information and the priority field (element 56) corresponds to the rest of the authorization information, the V-bit invalidates segments with the same address that have not won content resolution and the priority field allows the segments to be prioritized; the authorization information will be transmitted with the

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data because it is attached as the header as in figure 5a-5f). The motivation being to eliminate blocking at each point in the switching process.

Regarding claim 19, Cordell, Cai, and Diaz disclose the method of claim 18.

5 Cordell and Cai lack the authorization information being a number of bits containing a coded designation for that port unit to which transmission of a data packet or cell is enabled from that port unit to which the authorization information is transmitted.

However, Diaz et al. further disclose the authorization information being a number of bits containing a coded designation for that port unit to which transmission of a data
10 packet or cell is enabled from that port unit to which the authorization information is transmitted (figure 5a-5f, elements 50 and 56; col. 10, lines 9-36 where the V-bit (element 50) corresponds to part of the authorization information and the priority field (element 56) corresponds to the rest of the authorization information, the V-bit invalidates segments with the same address that have not won content resolution and
15 the priority field allows the differently addressed segments to be prioritized; these priority fields are based on the destination address as is shown in col. 10, lines 17-21). It would have been obvious to one with ordinary skill in the art at the time of invention to include the authorization information detail with the method of claim 18 for the same reasons and motivation as in claim 18.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Cai et al. as applied to claim 16 above, and further in view of Kozaki et al. (U.S. Patent 5,184,346).

5 In regard to claim 17, Cordell and Cai et al. disclose a method according to claim 16, wherein the availability information is a number of bits corresponding to at least one of an actual and maximum possible number of port units at least to be connected to the central switching unit, the position of a bit within the number of bits indicating the port unit to which a packet or cell is available for transmission (Cordell col. 7, lines 9-13
10 where the availability information is in the switch routing tag and the first 9 bits for instance, correspond to at least one of an actual and maximum possible number of port units)... Cordell and Cai et al. lack one binary state of the bit signifying the presence of a data packet or cell to be transmitted and the other binary state signifying the absence of a data packet or cell. However, Kozaki et al. disclose one binary state of the bit
15 signifying the presence of a data packet or cell to be transmitted and the other binary state signifying the absence of a data packet or cell (col. 6, lines 64-68). It would have been obvious to one with ordinary skill in the art at the time of invention to include the binary bit indicator with the availability information. The motivation being to recognize when data has been sent out of sequence or no data has been sent at all.

Claims 21, 26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Cai et al. and further in view of Papierniak et al. (U.S. Patent 5,825,751).

5 In regard to claim 21, Cordell discloses a method for switching and routing a plurality of packet-oriented signals..., which comprises:

- a) supplying a respective signal to at least one port of a plurality of port units, each of the port units having a predetermined number of ports (figure 9, elements 91, 94 where there are clearly a plurality of port units (elements similar to 91 and 94) and a
10 predetermined number of ports to which signals must be applied as is indicated by the inputs and outputs on the port units);
- b) connecting the signal from a port on a port unit to another port on another port unit through a central switching unit coupled to the port units, and carrying out signal transmission between the port units and the central switching unit in steps by
15 transmitting data blocks (figure 9, elements 91, 93, 94 where the datapaths between these elements signify the coupling and element 93 is the central switching unit (col. 22, lines 12-13));
- c) ascertaining with each port unit an address information item for each data packet supplied to one of the at least one port of each port unit and using the address
20 information item to determine that port unit to which the data packet will be transmitted, each port unit storing, in a buffer memory associated with the respective port unit, the data packet as a whole or segmented into a plurality of cells (col. 3, lines 42-43 shows a

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buffer associated with an address of a port unit; col. 7, lines 50-52 shows the cell being directed to a final output port);

d) compiling with each port unit, at predetermined intervals of time, availability information indicating to which of the other port units the at least one of cell and at least one data packet will be transmitted (col. 7, lines 9-11 where the routing tag is the availability information as defined in claim 14, section D (i.e. an address); col. 13, lines 39-44 where the phrase "address comparisons made earlier in a round of contention" teaches address comparisons that are done in a predetermined order, or at predetermined intervals of time);

e) transmitting with the port units the availability information to the central switching unit (col. 7, lines 9-23 where by having the cells being self routing and having parts of the routing tag specifying output ports, the availability or routing tag must be transmitted with the cell to the central switching unit (93) in order to get to the output ports and be further directed to its destination);

f) the central switching unit evaluating the availability information and using a prescribed specification to ascertain authorization information indicating from which port units a respective data packet or cell can be transmitted to which other port unit in a next step or in a particular one of next steps without the occurrence of blocking (col. 22, lines 12-15 and col. 12, lines 34-36 where the CRD evaluates the availability information (the address information) and ascertains authorization information (the result of the address comparison by the CRD); col. 24, lines 64-67 shows the avoidance of blocking);

g) transmitting the authorization information at least to the relevant transmitting port units with the central switching unit (col. 8, lines 42-45);

h) transmitting particular released data packets or cells with the transmitting port units to the central switching unit, and the central switching unit connecting the

5 necessary paths between the transmitting port units and the receiving port units and transmitting the data packets or cells to the respective receiving port units through the connected paths (figure 9, elements 91, 93, and 94 and the data paths between them indicate the input of a data packet (91), en route to its destination (93), arriving at the destination or output (94)); and

10 i) the receiving port units evaluating the address information in the received data packets or cells and assigning the data packets or cells to the relevant ports (col. 7, lines 46-52 shows the incoming data being routed to the appropriate output port address, thus the address information must have been evaluated at the receiving ports)...

15 Cordell lacks ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports.

However, Cai et al. disclose ...if necessary, recombining the cells received, in a plurality of steps, into data packets and outputting the data packets through the relevant ports (figure 3 where elements 130, 140, and 150 are incoming data packets that are
20 desegmented into cells by element 20 then recombined at element 50 to form the output packet 160, although 20 and 50 are separate switches it is a matter of design choice to make them separate switches or combine them into one switch). It would have been

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obvious to one with ordinary skill in the art at the time of invention to include the switch with the deassembler and assembler. The motivation being to increase apparent bandwidth of the system by splitting up the packet, processing it, then reassembling them into the packet.

5 Cordell and Cai et al. lack, ...packet-oriented signals in local area networks based on Ethernet standards... However, Papierniak et al. disclose packet-oriented signals in local area networks based on Ethernet standards (figure 2B where the ATM switch with LAN emulation (element 226) acts as the switch of Cordell and Cai et al. with the added capability of Ethernet LAN emulation). It would have been obvious to
10 one with ordinary skill in the art at the time of invention to include the packet-oriented switch with the Ethernet LAN. The motivation being to allow transmission of ATM packets over an Ethernet based LAN.

In regard to claim 26, Cordell and Cai et al. disclose an apparatus according to
15 claim 22, wherein each of said control units is said port units has an interface unit for coupling said port units to said central switching unit (Cordell figure 9, element 92)... Cordell and Cai et al. lack a protocol unit for carrying out control tasks internal to a respective one of said port units. However, Papierniak et al. disclose a protocol unit for carrying out control tasks internal to a respective one of said port units (figure 3 where
20 the processor, and buffer are part of a port unit, col. 4, lines 20-29 where the processor carries out protocol control tasks internal to a respective one of said port units). It would have been obvious to one with ordinary skill in the art at the time of invention to include

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the apparatus of claim 22 with the protocol unit. The motivation being to allow for manipulation and control of the data packet.

Regarding claim 30, Cordell, Cai, and Papierniak disclose the apparatus of claim

5 26. Cai and Papierniak lack said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell. However, Cordell further discloses said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central
10 switching unit immediately with a next data packet or a next cell (the availability information is transmitted with the data packet as is read in col. 7, lines 9-23; the availability information is transmitted with the data packet after the authorization information (results of the CRD unit) is received). It would have been obvious to one with ordinary skill in the art at the time of invention to include the configured interface
15 unit for the same reasons and motivation as in claim 26.

Claims 27 and 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cordell in view of Papierniak et al.

20 In regard to claim 27, Cordell discloses an apparatus according to claim 23, wherein each of said control units is said port units has an interface unit for coupling said port units to said central switching unit (figure 9, element 92)... Cordell lacks a

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protocol unit for carrying out control tasks internal to a respective one of said port units.

However, Papierniak et al. disclose a protocol unit for carrying out control tasks internal to a respective one of said port units (figure 3 where the processor, and buffer are part of a port unit, col. 4, lines 20-29 where the processor carries out protocol control tasks

5 internal to a respective one of said port units). It would have been obvious to one with ordinary skill in the art at the time of invention to include the apparatus of claim 23 with the protocol unit. The motivation being to allow for manipulation and control of the data packet.

10 Regarding claim 31, Cordell and Papierniak disclose the apparatus of claim 27.

Papierniak lacks said interface unit that is configured to transmit next availability information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell. However, Cordell further discloses said interface unit that is configured to transmit next availability

15 information, ascertained after receipt of the authorization information, to said central switching unit immediately with a next data packet or a next cell (the availability information is transmitted with the data packet as is read in col. 7, lines 9-23; the availability information is transmitted with the data packet after the authorization information (results of the CRD unit) is received). It would have been obvious to one

20 with ordinary skill in the art at the time of invention to include the configured interface unit for the same reasons and motivation as in claim 27.

Response to Arguments

Objection to the claim of Foreign Priority is withdrawn due to the filing of the certified copy of the foreign document.

5 All objections to the specification are withdrawn due to applicant's corrections.

Objections to all claims except the objection to claim 25 for failing to further limit the claim are withdrawn due to applicant's corrections.

10 Applicant's arguments, see pages 3 and 4 of the Remarks section, filed 26 January 2004, with respect to claims 22 and 23 have been fully considered and are persuasive. The 35 U.S.C. 112 second paragraph rejection of claims 22 and 23 has been withdrawn.

15 Applicant's arguments filed 26 January 2004 have been fully considered but they are not persuasive.

Regarding claim 25, applicant argues that claim 25 further limits claim 24 by claiming the "collision resolution unit is integrated in said central switching unit" and that
20 claim 24 is silent on having the collision resolution unit being integrated in the central switching unit. However, claim 24 states "said central switching unit has a collision resolution unit". By having a collision resolution unit, it is implied the central switching

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unit has the collision resolution unit integrated in it. How else can the central switching unit have (contain) the collision resolution unit without having it integrated in itself?

Regarding claims 14, 21, 22, 24, 26, 27, 28, and 29, applicant argues that all
5 mentioning of "port units" in the claims refers to the same set of "port units" if this is the case, then the claim language needs to reflect this. That is, if all the "port units" are the same then why are there differences in the claim language?

Applicant argues that the "steps" of claim 29 means the cells are received in
10 steps. As mentioned above, these steps need to be disclosed. It is improper to mention steps in a claim and not disclose what they are.

Although applicant clarifies the reference to the phrase "the information" in claims
28 and 29, the claim language needs to reflect these clarifications. One reason for this
15 is because if the application is allowed, only the claims and specification will be printed, none of the correspondence will be printed; therefore the claims must reflect the clarification as stated in the remarks.

Applicant argues that "the data packet" and "the one... data packet" have
20 antecedent basis because "data packets" is disclosed in claims 14, 21, and 22.

However, "the data packet" and "the one... data packet" suggests only one data packet and applicant does not provide any antecedent basis for a single data packet.

Applicant has changed "availability information" to "availability request information". As discussed above this is new matter and there is no support in the specification for it. As also mentioned above, if applicant finds support in the
5 specification for "availability request information" the previous rejections are still maintained because there is no difference in the claim language between "availability information" and "availability request information". They both provide port address information and this limitation is addressed in the previous rejections.

10 In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in
15 the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, motivation for claims 14, 22 can be found in Cai et al. col. 4, lines 28-33 (text explaining figure 3). Motivation for claim 18 can be found in Diaz et al. col. 10, lines 26-34. Motivation for claim 17 is known in the art, that is idle data must be sent in connection oriented
20 systems such as ATM to maintain the connection during transmission even if there is no data being sent. Motivation for claim 21 can be found in figure 2B.

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In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant's arguments, see remarks, page 4, filed 26 January 2004, with respect to the rejection(s) of claim(s) 28 and 29 under 35 U.S.C. 112 second paragraph have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of 35 U.S.C. 112 second paragraph as discussed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

- 5 For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



10 JK
March 29, 2004

Joshua Kading
Examiner
Art Unit 2661

KENNETH VANDERPUYE
PRIMARY EXAMINER